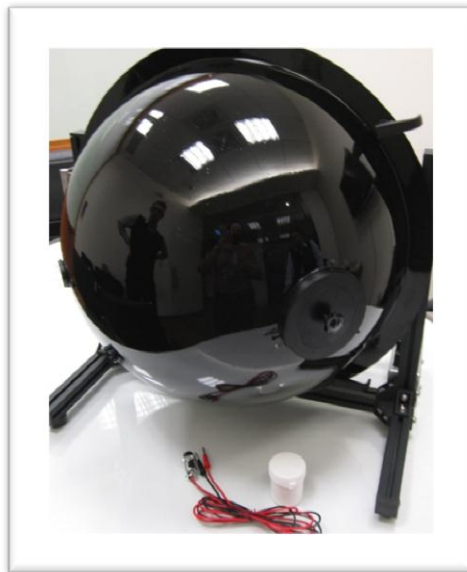


Allied Scientific Pro

COMPLETE PHOTOMETRY SYSTEM



Allied Scientific Pro

Allied Scientific Pro is an optics and photonics sourcing company with offices in Canada and Taiwan. We specialize in bringing high-quality Asian solutions to global customers.

Our integrating spheres are of the highest standards and have been sold to numerous high-profile and demanding customers. We only sell the best spheres for light measurement. All parts are made in Taiwan in a suitable environment.

The BaSO₄ paint with each integrating sphere has been developed through 25 years of experience in the domain and has both an attractive reflection spectrum and long durability. As compared to most integrating spheres which are required to be re-painted every 1 to 2 years, our paint is guaranteed to last.

Our smaller spheres are built from fiber glass allowing high strength and lightweight. Larger spheres are built from specially treated and custom made aluminum. This ensures a lasting shape, good thermal properties, light weight construction and solid build.

Please refer to this information as a guide to the solution we can offer you. Please see below for more details.

When choosing an integrating sphere of any size, please consider us for great quality and price.

Best regards,

Allied Scientific Pro

Technical specifications of light measurement for testing lighting efficiency

1- Supply of spectrophotometer and integrated sphere system (240V/50Hz) to measure light spectral and colorimetric aspects of energy saving units which includes the following:

- a. All types of energy saving lamps including Compact fluorescent lamps (CFL and CFLi)
- b. Fluorescent tube lamps (double capped) like T5, T8, T10 and T12
- c. HID lamps, CFL, LED, HPS and metal halide lamps
- d. Halogen lamps
- e. Interior lighting lamps and units (spot lights, bulbs, lighting fixtures)
- f. Exterior lighting fixtures (flood light, street light, tunnel light).
- g. Additional types of lamp such as
 - i. Dimmable CFLs
 - ii. Ultra constant discharge lamps

All lamps with internal (integrated) or external ballasts are tested according to International Electrotechnical Commission and European guidelines 245/2099 and 244/2009.

2- Equipment can include all common types of sockets for lamps such as:

E14, E27, E40, G4, G5, G9, GU10, MR16 *and more*.

3- Photometric and colorimetric measurements is in accordance with the requirements of (CIE) and IEC such as IEC60969 and IEC60901

4- The testing system can include the following:

- a. Spectroradiometer
- b. Digital DC and AC power meters
- c. DC power supply, AC power supply
- d. Auxiliary correction lamp for absorption error.
- e. Integrating sphere
- f. Standard lamp
- g. Standard ballast for the AC line voltage or according to IEC 60929 for high frequencies.
- h. Case or cabinet to contain all hardware and accessories except for the integrating sphere.
- i. Windows compatible computer system.

5- The system is capable of testing photometry and colorimetry and electrical aspects as follows:

a. Color aspects:

- i. Chromaticity Coordinate
- ii. CCT according to CIE 15:2004
- iii. Color Rendering Index (CRI) according to CIE 13.3:1995
- iv. Color deviation
- v. Peak wave length
- vi. Dominant wave

b. Photometric aspects

- i. Luminous flux according to CIE 84:1989
- ii. Luminous Power
- iii. Luminous Flux efficiency
- iv. Standard deviation of colour matching.

c. Electrical aspects: Current, voltage, Power

6- Lamp lumen maintenance factor is according to CIE 97:2005

7- Integrated sphere diameter can be any size up to 3m.

8- Full English language software package can be provided as required.

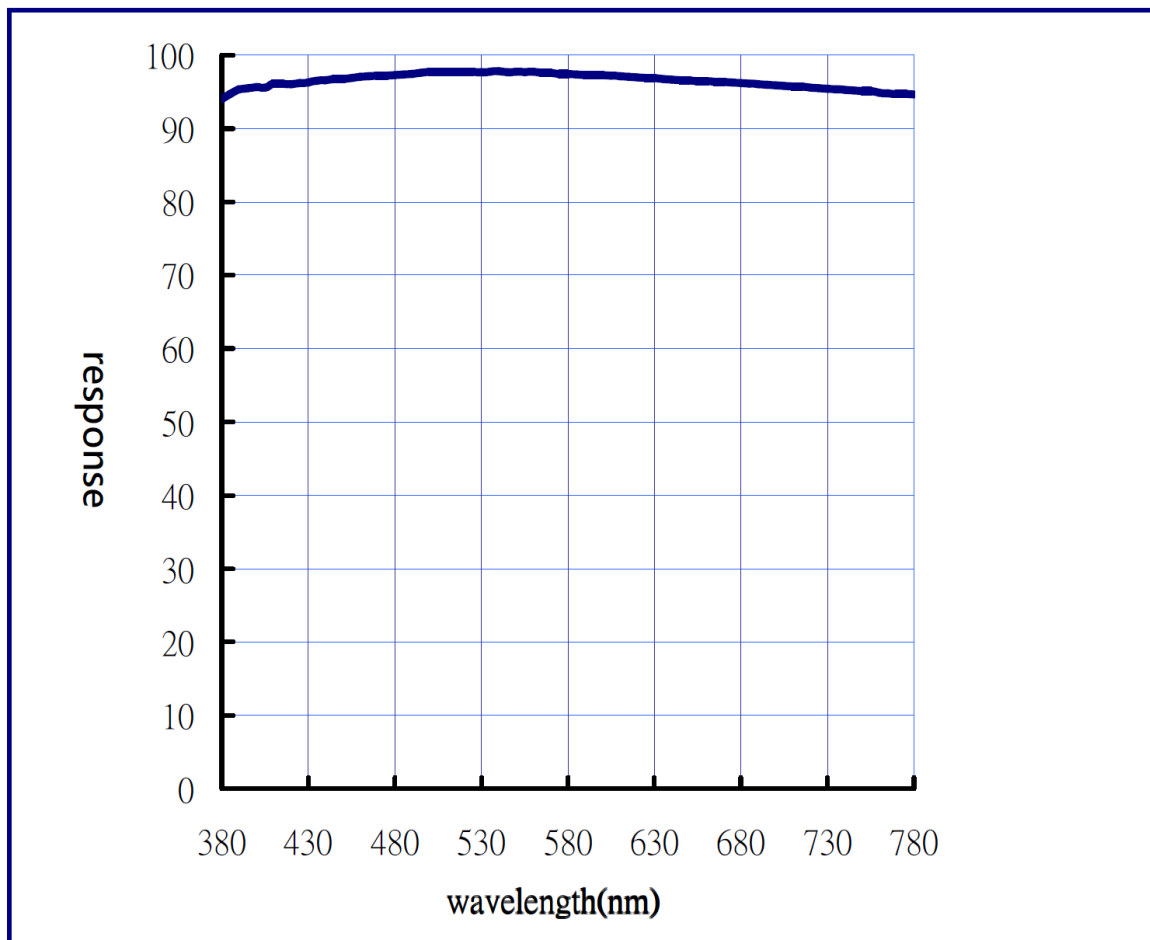
9- Offer includes installation, commissioning and training for selected staff people on how to use and utilize test equipment. This is normally carried out by 2 engineers and 1 ASP personnel and takes approximately one week to complete.

Data Sets:

Sphere reflectance data

Paint: BaSO₄

Reflectivity (National Standards Laboratory):



Spectrometer Calibration Data:

Wavelength Calibration Data

Serial Number	RS- OP020911
Module	SMUSB
Slit	50um
Bandwidth	350-1050nm
Number of Pixels	2048
Spectral resolution	0.5nm
Power input	5V, DC 0.14A

λ	Pixel#	Predicted λ	$\Delta \lambda$
365.015	292	365.658	0.643
404.660	388	403.707	-0.952
435.835	467	435.823	-0.012
546.074	726	545.280	-0.791
576.960	803	578.799	1.839
730.030	1140	728.477	-1.553
809.320	1323	810.426	1.106
871.670	1460	871.391	-0.279

Intercept	2.57782E+02
First Coefficient	3.46454E-01
Second Coefficient	8.57498E-05
Third Coefficient	-2.40987E-08
Regression Fit	99.9998

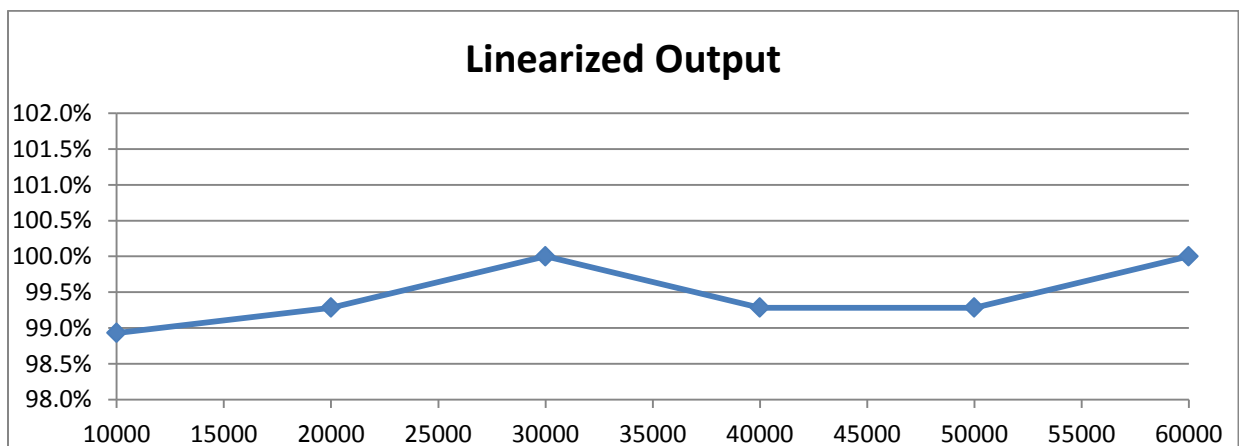
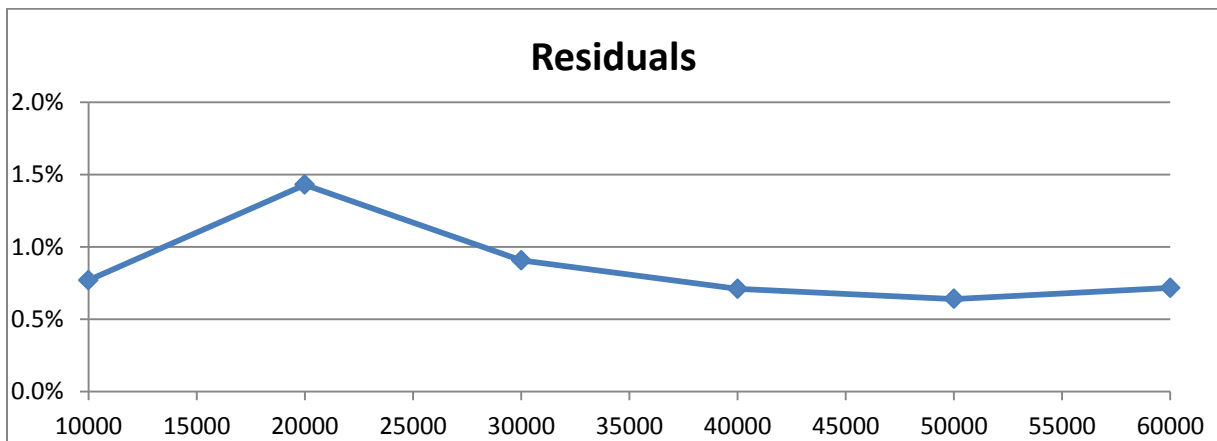
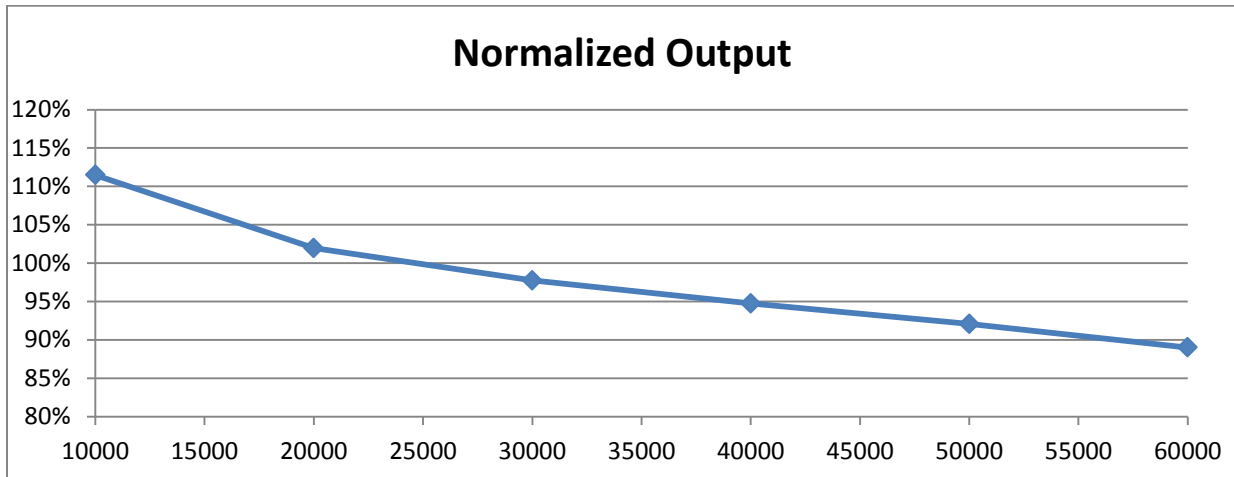
Linearity Test

Serial Number: RS-OP120511

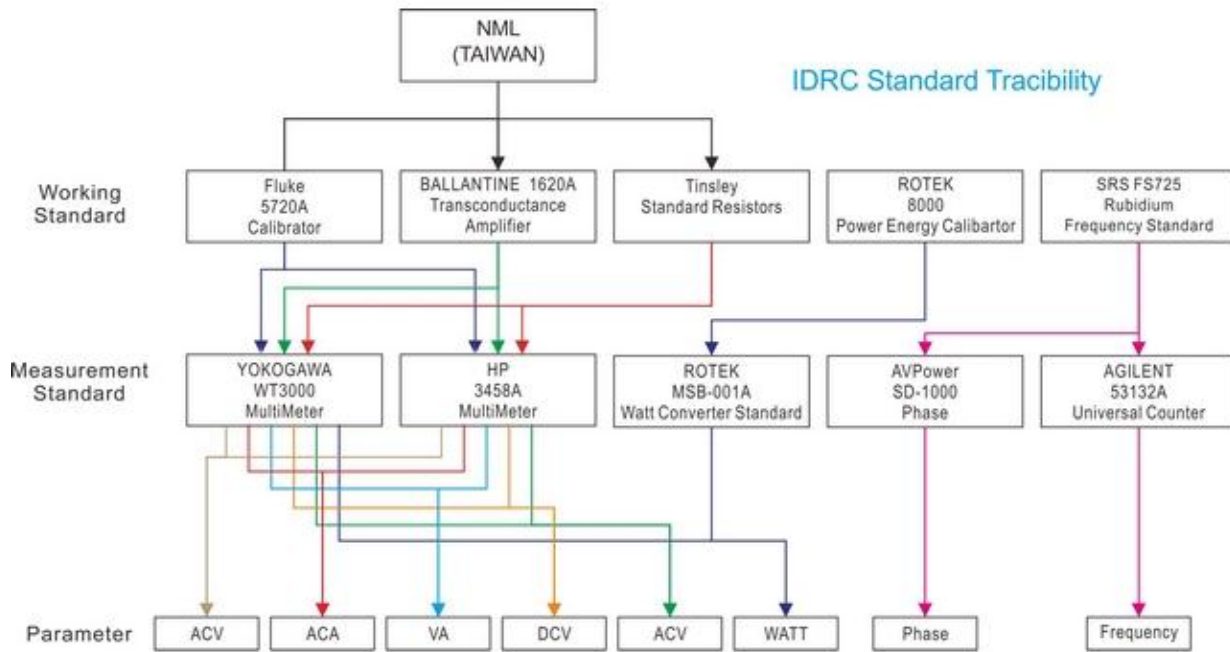
Intercept: 2.36858E+02

Test Date: 2012-06-20

Linearity: 99.9998



Electronic Testing Tracability



Customer References

Previous successful supply and installation of similar systems should be mentioned in details in the reference list.

Recent success cases from the manufacturer include spheres custom built and sent to the following customers:

DELPHI

Delphi is a leading global supplier of electronics and technologies for automotive, commercial vehicle and other market segments. Operating major technical centers, manufacturing sites and customer support facilities in 30 countries, Delphi delivers real-world innovations that make products smarter and safer as well as more powerful and efficient.

December 2011 ASP sold a 500 mm integrating sphere complete with mountings for different light sources. The sphere went through extensive design process to ensure the customer got value for money. The sphere was shipped ahead of schedule and gave us great feedback via our online feedback form. This is the completed sphere:



Panasonic

ideas for life

Panasonic is a large international electronics company producing lighting for numerous applications. Manufacturer has sold a measurement sphere to Panasonic for their testing facility.

The system sold to Panasonic was largely to measure the optical output of their LED and small lighting systems. The customer was very happy with the quality of the sphere and the professionalism with which it was installed on their premises. The sphere is now over a year old and still in good operating condition.



Nichia Japan is a world class LED manufacturer. They are particularly famous after being first in the world to manufacture and sell the white LEDs.

The manufacturer built and sold a complete 1.5 m diameter integrating sphere solution beating numerous competitors on quality and price.

The manufacturer first gained the attention of Nichia when they managed to repaint and repair a poor quality Chinese made sphere in one working day. After this very quick project, the manufacturer easily won a tender to produce a much larger sphere for testing arrays of LEDs and home lighting.

Tokushima Centre of Measurement

Tokushima centre of measurement is the gold standard for optical measurements for LED valley in Tokushima Japan. Many research groups and companies use these facilities to carry out delicate experiments and industrial tests requiring the highest standards of equipment. The manufacturer has provided their largest integrating sphere to date (3 meter diameter) weighing only 300 kg – a world first. Please see **figures 3, 4, 5, 6** for more information.



Fig 1. 1.5 m Integrating sphere for Nichia, Japan



Fig 2. Electronic control (DC, AC and Ballast control units)



Fig 3. 3m diameter integrating sphere for Tokushima Centre of Measurement, Japan

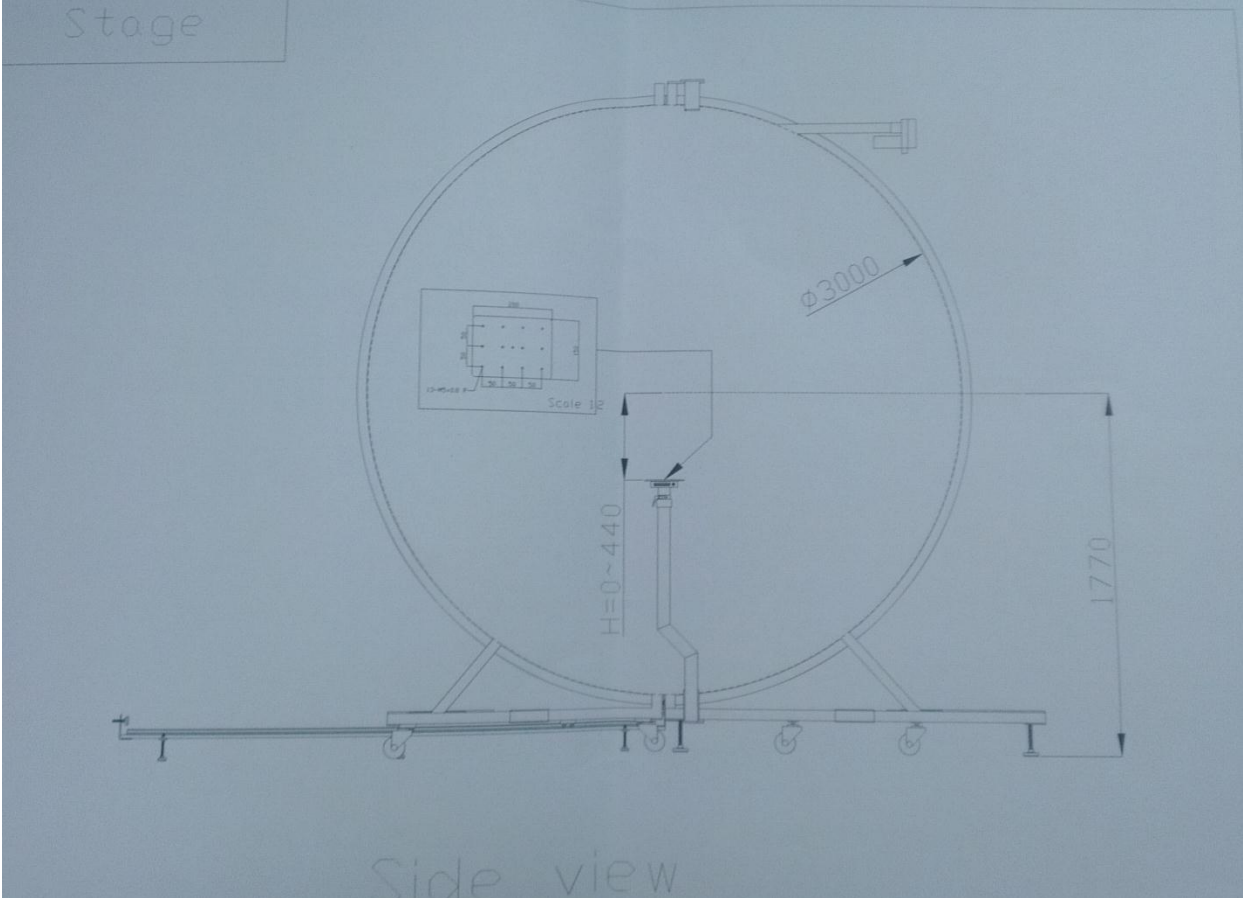


Fig 4. Technical drawing of 3m sphere

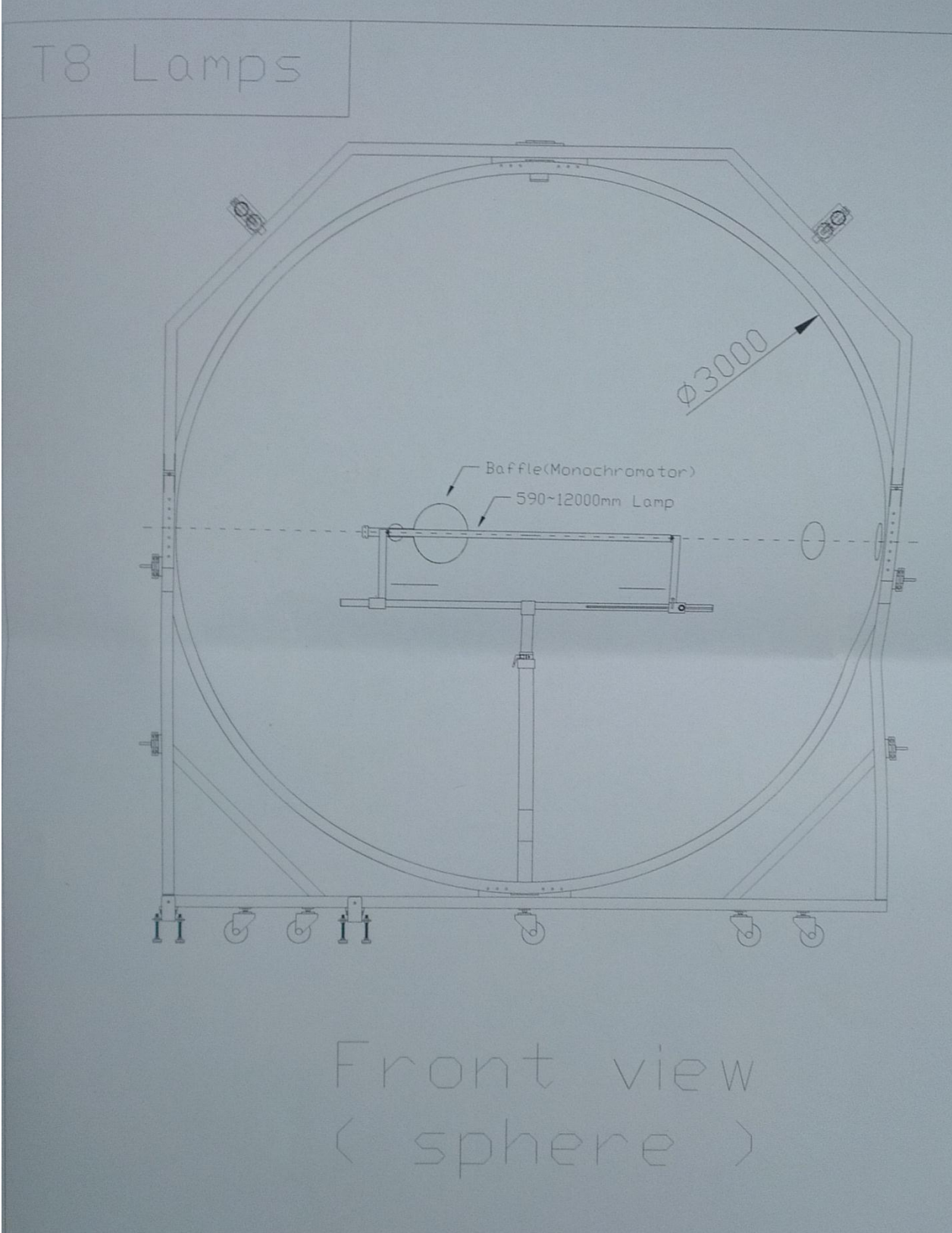


Fig. 5: Technical drawing of 3m sphere with T8 lamp post. This can be changed depending on your requirements.

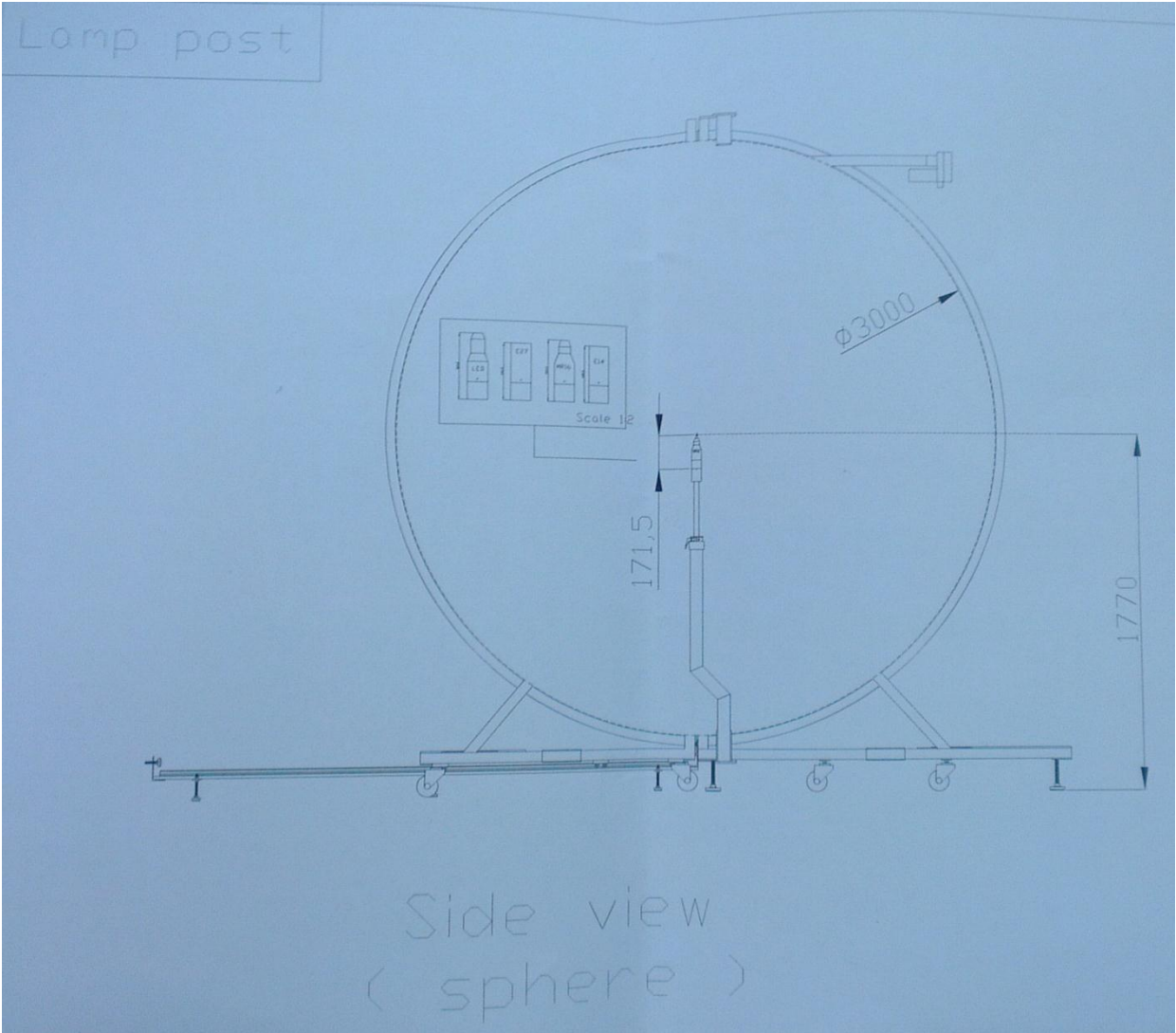


Fig. 6: Technical drawing of 3m sphere including adapters for LEDs, E27, MR16, E14. More can be built depending on your requirements.